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Can the economic impact of political decentralisation be measured?

by

Roberto Ezcurra[a] and **Andrés Rodríguez-Pose**[b]

[a]Departamento de Economía
Universidad Pública de Navarra
Campus de Arrosadia s/n
31006 Pamplona
Tel. (+34) 948169359
Fax (+34) 948169721
E-mail: roberto.ezcurra@unavarra.es

[b]Department of Geography and Environment
London School of Economics, London, UK
and IMDEA Social Sciences, Madrid, Spain

Houghton St
London WC2A 2AE, UK
Tel: +44-(0)20-7955 7971
Fax: +44-(0)20-7955 7412
E-mail: a.rodriguez-pose@lse.ac.uk

Can the economic impact of political decentralisation be measured?

Abstract

This paper examines whether, given the increasing salience of subnational governments, political decentralisation has an impact on overall economic performance. It uses panel data analyses in order to determine the association between a number of the different indices of political decentralisation developed over the last decade and a half with two basic measures of economic performance: changes in aggregate GDP per head and the evolution of within-country territorial inequalities. The results highlight that, in the case of economic growth, the perception we may have of how political decentralisation affects economic performance is highly contingent on the index we use, with results ranging from a mildly positive to a neutral influence of political decentralisation on economic growth. For regional inequalities, political decentralisation seems to lead to a rise in disparities, regardless of how political decentralisation is measured.

Keywords: Political decentralisation, economic growth, regional disparities, regions, Europe.

JEL: H70, R11, R59

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Can the economic impact of political decentralisation be measured?

Introduction

Measuring decentralisation is not easy (Ebel and Yilmaz, 2002; Schakel, 2008). Measuring political decentralisation even less. And measuring the link between political decentralisation and economic performance almost impossible. Despite this, over the last two decades, the emergence of a 'new' regionalism (Keating, 1997; Tömmel, 1997), the growing salience of subnational governments all over the world (Everingham et al., 2006; Greer, 2010; West et al., 2010), and the global drive towards devolution (Rodríguez-Pose and Gill, 2003) have pushed a growing number of scholars in different disciplines across the social sciences to calculating the dimension of decentralisation, in general, and of political decentralisation, in particular (e.g. Castles, 1999; Lane and Ersson, 1999; Lijphart, 1999; Woldendorp et al., 2000; Rodden and Wibbels, 2002; Treisman, 2002; Schneider, 2003; Henderson and Arzaghi, 2005; Hooghe et al., 2008). Using a variety of criteria and methodologies, these scholars have produced a myriad of decentralisation indices which rank countries – and increasingly, albeit still in an incipient way and without sufficient within-country variation, regions – the world over according to the level of political autonomy of their subnational governments.

These assessments, indices, and rankings represent, no doubt, an important progress in our understanding of the diversity of decentralisation processes. The also mark a crucial step away from the 'methodological nationalism' which has traditionally dominated the analysis

of political processes. However, taking into account the differences in criteria, indicators, methods, geographies, and timeframes, the resulting political decentralisation indices are inevitably too diverse and, at times, even contradictory. Rarely does a country or a region feature in the same position in the ranking in two different indices. The diversity of these indices raises the question of whether we can accurately assess the potential impact of political decentralisation on the economy; whether the different conceptions and criteria used in the configuration of political decentralisation rankings affect our perception of how decentralisation and devolution processes associate with economic trajectories. In sum, whether the economic impact of political decentralisation can be measured accurately. This paper addresses these issues by looking – using panel data analyses – at the link between different indices of political decentralisation with two basic measures of economic performance: changes in aggregate GDP per head and the evolution of within-country territorial inequalities.

In order to do that, the paper is divided into the following sections. First we present a summary overview of some of the different recent measurements of political decentralisation. This is followed by the empirical analysis, which is divided into two parts. The first one looks at the link between changes in regional authority and economic growth using the prism of different measurements of political decentralisation compiled by different authors. The second part of the empirical analysis assesses the connection between decentralisation and subnational spatial disparities. The final section concludes that, in the case of economic growth, the perception we may have of how political decentralisation affects economic performance is highly contingent on the index we use, with results ranging from a mildly positive to a neutral influence of political decentralisation on

economic growth. For regional inequalities, political decentralisation seems to lead to a rise in regional inequalities, regardless of how political decentralisation is measured.

1. Measuring political decentralisation.

Measuring of the degree of decentralisation is by no means an easy task. There are a number of reasons for this. First, the devolution of power from central to regional and local governments is a complex and multidimensional process (Martínez-Vázquez and McNab, 2003; Schneider, 2003). It involves at least a power relationship (political decentralisation), a management dimension (administrative decentralisation), and a resource dimension (fiscal decentralisation) and these dimensions do not always match. Depending on questions of power balance and on issues of legitimacy (Rodríguez-Pose and Gill, 2003), it is often the case that two subnational governments in different countries with very similar political powers may have widely different resources at their disposal and that, vice versa, regional and local governments with similar access to resources and funding may enjoy very different levels of authority. In cases of asymmetric decentralisation, this situation may even be reproduced within national boundaries. Hence, coming up with an objective and widely accepted measure of overall decentralisation is nigh to impossible. Second, even if we look into each of the dimensions of decentralisation, no single indicator is able to adequately reflect the real level of subnational autonomy registered within a specific country (Ebel and Yilmaz, 2002).

Despite these difficulties, there has been no shortage of interest by scholars in different social sciences trying to measure the true dimension of decentralisation. Fiscal

decentralisation researchers have been those who have spent more time and resources measuring the dimension of subnational autonomy from a comparative perspective. Since the early works of Tiebout (1956), a considerable number of studies have used a variety of measures of fiscal decentralisation. Most of the existing studies on this topic use indicators of fiscal decentralisation based on the information provided by financial data drawn from the IMF and the OECD. While these data are far from perfect[1], they have been widely used in order to capture the relevance of fiscal decentralisation in different countries. However, local revenue and expenditure indicators say very little about differences in the level of subnational decision-making authority across regions and countries and about existing diversity in subnational powers of policy implementation (Schakel, 2008).

Partially as a consequence of this problem, the last decade and a half has witnessed a surge in interest in assessing and measuring the dimension of political decentralisation across countries and regions. Since 1999 a number of social scientists – mainly political scientists, but also several economists – have plunged themselves into assessing the level of political decentralisation across countries and regions. Schakel (2008) has identified and analysed seven such indices: Lane and Ersson (1999), Lijphart (1999), Woldendorp et al. (2000), Hooghe and Marks (2001), Treisman (2002), Arzaghi and Henderson (2005), and Brancati (2006). But these seven indices are by no means the only ones. Castles, 1999, Rodden and Wibbels, 2002, Schneider, 2003, and, last but perhaps more importantly, Hooghe et al., 2008 have also trod this path.

1 According to Ebel and Yilmaz (2002: 6-7), local expenditure and revenue data not really convey the true degree of local fiscal autonomy, as they fail to distinguish between tax and non-tax revenues and between conditional and unconditional transfers.

The common denominator of the works aiming to measure political decentralisation – or, in some cases, regional autonomy – is that there is none. First, there is no common definition of what is understood as political decentralisation. As a consequence, different authors have used different criteria, indicators, methods, timeframes, and geographies in order to come up with their own measure of political decentralisation[2]. The numbers of dimensions vary enormously and so do the resulting rankings. Lijphart (1999), for example, constructs his index of political decentralisation for 36 countries around a simple dimension of unitary/federal and centralised/decentralised dichotomies. His measure of decentralisation is derived from five ordinal categories that are used to classify the various countries into unitary and centralized, unitary and decentralized, semi-federal, federal and centralized, and federal and decentralized. Arzaghi and Henderson (2005), by contrast, rely on a much richer set of dimensions. These dimensions include whether the country is unitary or federal, whether local and regional officials are elected or not, whether the centre has the capacity to suspend local and regional government or to override subnational decisions, whether lower tiers of government have revenue raising authority, and whether there is any revenue sharing. In between these extremes, other indices use a wide array of criteria and dimensions. Lane and Ersson (1999) construct an index for 18 Western European countries by awarding countries a number of points in four different criteria. The criteria include the extent of federalism, special territorial autonomy, functional autonomy, and the level of government discretion. Hooghe and Marks (2001) articulate their index of regional

2 It is not the role of this paper to highlight what is understood by political decentralisation. We simply resort, instead, the different interpretations of political decentralisation of the authors of the different indices.

autonomy for 14 countries in Western Europe around constitutional federalism, special territorial autonomy, the role of regions and central government, and regional elections. In turn, the Woldendorp et al.'s (2000) index attempts to quantify "how independent the non-central units of government are as regards policy making" (Woldendorp et al., 2000: 35). The value of this decentralisation measure is based on the sum of four indices that measure the degree of fiscal centralization, regional autonomy, centralization, and local government autonomy for 34 European countries. Vertical, decision making, unemployment, sectoral, fiscal, and personnel decentralisation are dimensions considered by Treisman (2002) for 41 mainly European countries, while Brancati (2006) looks at subnational elections, subnational legislative control of policies, and subnational veto over constitutional amendments for roughly the same number of countries. Schneider (2003) constructs his index of political decentralisation alongside two other indices looking at the fiscal and administrative dimension of the transfer of powers to subnational governments. For his political decentralisation index he two key criteria: municipal and state elections for a total of 68 countries around the world.

But perhaps the most ambitious, comprehensive, and overarching effort to measure the political dimension of decentralisation and subnational autonomy is the regional authority index (RAI) proposed by Hooghe et al. (2008). According to this indicator, regional authority is disaggregated into two components which capture respectively the degree of authority exercised by a regional government in the region over those who live in its territory (*self-rule*) and in the country as a whole (*shared rule*) (Marks et al., 2008). Self-rule has to do with the degree of independence of the regional government from the influence of central authorities and the scope of regional decision making. Hooghe et al.

(2008) calculate the value of self-rule as the sum of four indicators: institutional depth, policy scope, fiscal autonomy, and representation.

- Institutional depth: This dimension measures the extent to which a regional government is autonomous rather than deconcentrated.
- Policy scope: This dimension depends on the range of policies for which a regional government is responsible in areas related to economic, cultural-educational, and welfare policies, as well as over aspects of constitutive or coercive authority and over membership of the community.
- Fiscal autonomy: This dimension captures the extent to which a regional government has authority on fiscal matters, independently of its expenditures or revenues.
- Representation: This dimension has to do with the existence of an independent legislature and executive at the regional level.

Shared rule measures the capacity of the regional government to determine central decision making and is in turn the sum of four indicators: law making, executive control, fiscal control, and constitutional reform (Marks et al., 2008).

- Law making: This dimension assesses the role played by regional representatives when establishing national legislation.
- Executive control: This dimension measures the extent to which a regional government can co-determine national policy in intergovernmental meetings.
- Fiscal control: This dimension reflects whether the regional governments can influence on the distribution of national tax revenues, including intergovernmental grants.

- Constitutional reform: This dimension covers the relevance of national government to co-determine constitutional changes.

Hooghe et al. (2008) RAI index thus includes a much larger set of dimensions than previous attempts at measuring political decentralisation. Its time coverage is also greater, expanding between 1950 and 2006 for the 42 countries included in the analysis. It also introduces a very important novelty with respect to all previous indices and for those interested in breaking the stronghold of 'methodological nationalism'; it allows for limited variation over time, both for regions and countries. The degree of variation of the disaggregated information provided for the regions within the various countries included in the index is, however, extremely limited, preventing the use of regions rather than nations as the main unit of analysis.

By and large, different decentralisation indices are highly correlated. But given the differences in dimensions, indicators, methodology used, and in time and spatial coverage, it comes as no surprise that oftentimes the indices produce what Schakel (2008: 153) has identified as, on the one hand, persistent cases of disagreement and, on the other, 'strange bedfellows'. The presence of these differences is evident when a simple correlation analysis is performed among the different indices. In Table 1 we conduct a Spearman's rank correlation coefficients between five of the most common political decentralisation indices: Lijphart (1999), Woldendorp et al. (2000), Treisman (2002), Brancati (2006), and Hooghe et al. (2008) indices. As expected, the estimated coefficients are in all cases positive and statistically significant, meaning that the variation in the indices goes roughly in the same direction. However, the magnitude of the coefficients reveals the existence of some

discrepancies between the rankings generated from the various indices, and, in particular, between Hooghe et al. (2008) and Woldendorp et al. (2000). This is not particularly surprising, since the description of the different measures shows the sheer differences in the criteria – e.g. whether the indices consider both local and regional government or only local government (Schakel, 2008) – used in each case to characterize the multidimensional nature of the decentralisation processes, a fact which should be borne in mind when interpreting our results.

INSERT TABLE 1 AROUND HERE

The presence of persistent cases of disagreement and 'strange bedfellows' across the different indices of political decentralisation considered undoubtedly has implications for our perception of how processes of political decentralisation may impact upon other socio-economic and political events. Hence, it can be expected that any given index of political decentralisation may have a different level of association with economic performance or the evolution of regional disparities in the countries covered than a different index. This may give rise to different and perhaps contradictory perceptions of how processes of political decentralisation affect economic performance and, ultimately, to contrasting policy recommendations about the potential returns of transferring greater powers to subnational government. This is precisely the aim of this paper: to assess whether differences in the diverse indices of political decentralisation yield different associations with economic trajectories in the countries being considered. In the following two sections, we perform the analysis of how different indices of political decentralisation – taking into account compatibility issues and controlling for other factors that may affect economic performance

– associate with economic performance and with the evolution of regional disparities in countries across the world.

Does regional authority affect economic growth?

The link between fiscal decentralisation and economic growth has attracted considerable attention. Over the last two decades, there have been numerous papers which have addressed this link from different angles and perspectives, either for a cross-section of countries (e.g. Davoodi and Zhou, 1999; Thießen , 2003; Martínez-Vázquez and McNab, 2003; Iimi, 2005; Thornton, 2007) or for specific countries (e.g. Zhang and Zou, 1998; Akai and Sakata, 2002; Stansel, 2005). The assessment of how political decentralisation affects economic growth has, by contrast, attracted much less attention. After an initial attempt by Castles (1999), research on the topic has stalled until recently (see Rodríguez-Pose and Ezcurra, 2011). The reason behind this dearth of research is certainly not due to lack of interest, but, first, to the absence of adequate comparative measures of political decentralisation, and second, once these measures began to emerge, to question marks about the reliability of the different indices produced. As, over the last decade and a half, political decentralisation indices and rankings have emerged thick and fast and as their sophistication has increased, lack of suitable measurements can no longer be considered as an excuse for the absence of research on this topic. Questions remain, however, about whether this multiplicity of indices gives a clear-cut message about the potential impact of political decentralisation on economic growth across different countries in the world.

In this section we address this question and investigate the link between regional authority and economic growth in the long term. Following the standard approach in the literature, we assume that a country's growth rate converges to a long-run path that is a function of different explanatory variables (Durlauf and Quah 1999). In particular, when the initial level of income is included in the list of regressors, the remaining variables determine in the final instance the steady-state level of income (Barro and Sala-i-Martin 1992). Political decentralisation is included as one of the explanatory regressors. Taking this into account, different versions of the following reduced-form growth model are estimated:

$$\Delta y_{ip} = \alpha + \beta PD_{ip} + \delta y_{i0} + \boldsymbol{\varphi}\mathbf{X}_{i0} + u_i \qquad (1)$$

where Δy is the average annual growth of real GDP per capita of country *i* over period *p*, PD is the level of political decentralisation in any given country averaged over the study period, y is the initial level of GDP per capita (to capture conditional convergence in income levels), and **X** is a vector of variables controlling for other factors assumed to influence growth. Finally, u is the corresponding disturbance term.

Our study covers 21 OECD countries for which data are available in a number of decentralisation indices produced by different scholars – Lijphart (1999), Woldendorp et al. (2000), Treisman (2002), Brancati (2006) and Hooghe et al. (2008). The choice of some political decentralisation indices over others is exclusively related to the aim of maximising the number of countries included in the analysis and to guarantee comparability among them. Similarly, the list of countries in our analysis is determined in the final instance by

data availability[3]. The time frames considered are those of the respective political decentralisation indices and range between the 50 years covered by Hooghe et al (2008) (1955-2005) and the fifteen years of the rankings compiled by Brancati (2006) and Treisman (2002) (1985-2000). It should be noted that the 50 years covered by Hooghe et al. (2008) with their RAI index is a considerably longer time span than those covered by earlier studies on the relationship between fiscal or political decentralisation and economic performance. One of the main advantages of resorting to OECD countries for the analysis is that, notwithstanding smaller measurement errors, they tend to share relatively similar growth mechanisms, which allows us to reduce any potential omitted-variable bias.

Our main interest lies in the coefficient of the different *Political Decentralisation (PD)* indices and in the extent to which our findings depend on the specific measure used to capture the level of decentralisation within the sample countries.

The vector **X** is formed by a series of variables commonly identified in the literature as potential determinants of economic growth (Mankiw et al., 1992; Sala-i-Martin et al., 2004). The variables considered here are the investment level, the human capital, stock and the population growth. Appendix 1 provides further details about the definition of these variables and the data sources used in each case.

3 The countries included in the study are Australia, Austria, Canada, Belgium, Denmark, Finland, France, Greece, Iceland, Ireland, Italy, Japan, Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, United Kingdom, and United States.

Table 2 shows the results of estimating model (1) using OLS. As can be seen, our cross-section growth regression performs well, explaining a substantial proportion of the variation in economic growth rates across the sample countries. The exceptions are regressions 4 and 5, including Brancati's (2006) and Treisman's (2002) political decentralisation indices, where the adjusted R^2 drops to levels of 23% (Table 1). The degree of collinearity among the regressors, as summarized by the average value of the variance inflation factor calculated for each explanatory variable, is relatively low, increasing our degree of confidence in the estimates of single coefficients.

Regarding the control variables, the analysis reveals that the coefficient of the initial GDP per capita is negative and statistically significant in all the versions of model (1), which provides strong support for the existence of a process of conditional convergence across the OECD countries in the periods of analysis considered in the different regressions. The coefficients of the remaining explanatory variables generally present the expected signs, although only the investment level is statistically significant in some of the specifications.

INSERT TABLE 2 AROUND HERE

Our main focus of interest lies, however, on whether political decentralisation is connected to economic growth and whether this connection is affected by the different political decentralisation indices considered. The results highlight a lack of a clear cut association between political decentralisation and economic growth in the 21 countries and for the different time frames analysed. Two of the indices – Lijphart (1999) and Woldendorp et al. (2000) – display a positive and significant coefficient, implying that the degree of authority

exercised by regional governments may contribute to promote economic growth at the national level in the long-term (Table 2, regressions 2 and 3). However, no positive association is detected between the degree of decentralisation and economic performance in the sample countries for the three other indicators – Hooghe et al. (2008), Brancati (2006), and Treisman (2002). In all cases the coefficients of the political decentralisation indices are positive or marginally positive, but never significant (Table 2, regressions 1, 4, and 5). These contrasting results indicate that, while on average the potential impact on political centralisation on economic growth can be considered as either neutral or marginally positive, this is highly contingent on the political decentralisation indicator used, as well as on the countries included in the sample. In any event, this conclusion should be treated with some caution, as the relationship between decentralisation and economic performance may be reciprocal (Arzaghi and Henderson, 2005).

In order to test whether the previous results are robust, we now investigate whether the observed link between decentralisation and economic growth varies throughout the study period. To this end model (1) – using Hooghe et al. (2008) RAI index[4] – is estimated again for five different subperiods: 1955-1965, 1965-1975, 1975-1985, 1985-1995, and 1995-2005. We are interested in finding out for each subperiod to what extent the initial value of the RAI affects economic growth during the ensuing years[5]. The first five columns of Table 3 present the results of the analysis. Our estimates show a positive and statistically significant correlation between regional authority and economic performance for 1965-

4 In the case of other decentralisation measures in the analysis, there is little time variation, with the norm being only one average score of the index for the study period. For this reason the other indices are excluded from this part of the analysis.

5 Note that the use of the value of the RAI index at the beginning of each subperiod allows us to reduce any potential inverse causation problem.

1975 and 1985-1995, which implies that, although the association between the RAI index and economic performance during the whole period of analysis is not significant, for certain subperiods political decentralisation may have had a positive impact on growth (Table 3, regressions 2 and 4). By contrast, during the subperiods 1955-1965 and 1975-1985 the relationship between the RAI and the dependent variable, although positive, is not statistically significant, and for the period 1995-2005, it is negative and not significant (Table 3, regressions 1,3, and 5). This points towards the fact that the impact of regional authority on economic growth also depends on the study period considered, which should be borne in mind when trying to draw short-term policy implications from our results.

INSERT TABLE 3 AROUND HERE

As a way to escape the simple estimation of different cross-section regressions and to increase the number of observations, we now exploit the panel dimension of the data. In order to do that our growth equation adopts the following form:

$$\Delta y_{i,(t+10)-t} = \alpha + \beta PD_{it} + \delta y_{i0} + \boldsymbol{\varphi}\mathbf{X}_{it} + \upsilon_{it} \qquad (2)$$

where the dependent variable is the average growth of GDP per capita measured over ten-year periods, μ are time-specific effects common to all countries, and ν is the error term. We pondered including country specific effects in model (2). However, we discarded this idea because, on top of reducing the degrees of freedom, country-specific effects may give rise to additional problems in this setting. As pointed out by Partridge (2005), fixed-effects

models may produce inaccurate results for measures that mostly vary cross-sectionally, as is the case of the RAI index of regional authority proposed by Hooghe et al. (2008).

The last column of Table 3 (regression 6) shows the results obtained when model (2) is estimated by OLS. Our findings do not differ significantly from those reported thus far. Countries where subnational governments enjoy greater levels of authority register on average marginally higher – although this effect is barely statistically significant – growth rates in successive years. This result is robust to the inclusion of time-specific effects (Table 3, regression 6). Likewise, the coefficient of the initial GDP per capita is again negative and statistically significant, corroborating the presence of a process of conditional convergence across the sample countries during the study period. This convergence process nevertheless wanes in time, as shown by the non-significant coefficients for the periods 1975-1985 and 1995-2005.

The wealth of information on the different dimensions of the RAI provided by Hooghe et al. (2008) allows us to thread at a finer level and analyse the impact of the various components of regional authority on economic growth. In order to complete the picture and further examine the robustness of our previous findings, the eight different dimensions of the RAI index are included as explanatory variables in model (2). The results of this analysis are summarized in Table 4. The estimates carried out reveal that most components of the RAI index are, in spite of displaying positive coefficients, are statistically unconnected to the dependent variable. The only exceptions are *institutional depth* and *representation* (and the *self-rule* category as a whole) which display mildly positive and marginally significant connections with economic performance.

INSERT TABLE 4 AROUND HERE

Decentralisation and spatial disparities: Does regional authority matter?

If the link between political decentralisation and economic growth has deserved relatively little attention, the connection between political decentralisation and the evolution of regional disparities has been basically ignored to date. As in the case of economic growth, various earlier studies have addressed the role played by fiscal decentralisation in explaining the level of regional disparities (e.g. Rodríguez-Pose and Gill, 2004; Ezcurra and Pascual, 2008; Lessmann, 2009; Rodríguez-Pose and Ezcurra, 2010). However, the relationship between regional authority and spatial inequality has so far only been explored by Rodríguez-Pose and Ezcurra (2010), and even then, as a supporting variable to their main variable of interest: fiscal decentralisation.

We aim to cover this gap by examining in this section the link between the degree of authority exercised by regional governments and within-country spatial disparities. In order to do that we need to quantify the relevance of regional disparities within each country. We therefore resort to the population-weighted coefficient of variation, a measure of dispersion widely used in the literature on spatial inequality (Ezcurra and Rodríguez-Pose, 2009). The advantage of this measure vis-à-vis other potential alternative indices of inequality is that it is independent of scale and population size, and satisfies the Pigou-Dalton transfer principle

(Cowell, 1995). Additionally, it takes into account the differences in population size across the various territorial units considered. This aspect has traditionally been overlooked by the literature on economic convergence which has flourished since the contributions of Barro and Sala-i-Martin (1991, 1992), despite the fact that, as noted by Petrakos et al. (2005), omitting population size may greatly distort our perceptions of spatial inequality.

The calculation of the population-weighted coefficient of variation requires regional data on GDP per capita and population. We have this information for 20 of the 21 countries included in our sample[6]. However, the use of regional data forces us to reduce significantly the time span under study. In particular, the period considered in the analysis carried out below covers from 1990 to 2005. The dynamic dimension of the analysis also implies that we have to limit ourselves to those indices of political decentralisation which allow for the greatest degree of time variation [e.g. Hooghe et al. (2008) RAI index], or to assume that regional and local autonomy does not change during the period of analysis, as we will do with Brancati (2006) and Treisman (2002).

The model employed to investigate the relationship between regional authority and spatial disparities adopts the following form:

$$c_{it} = \alpha + \beta PD_{i,t-l} + \boldsymbol{\varphi}\mathbf{X}_{it} + \varepsilon_{it} \qquad (3)$$

where c is the value of the population-weighted coefficient of variation in year t, $\mathbf{X}$ is a

6 Iceland had to be excluded due to the lack of regional data.

vector of control variables and ε is the corresponding disturbance term[7]. We specify l-period lagged values of the political decentralisation indices in order to reduce any potential endogeneity problem (Ezcurra and Pascual, 2008), as, as noted by Rodríguez-Pose and Gill (2004), there is often a lag of between one and three years between the changes in subnational expenditures figures and changes in within-country regional disparities.

The control variables in vector **X** include the wealth of the country and its size, as well as the degree of trade openness and a proxy for the redistributive capacity of the public sector. Since the pioneering work of Williamson (1965), the empirical literature on spatial inequality has emphasized the relevance of the level of economic development in explaining regional disparities (e.g. Terrasi, 1999; Petrakos et al., 2005). From a theoretical perspective it is difficult to determine beforehand the final effect of this variable on spatial inequality. Factors such as the existence of diseconomies of agglomeration prevailing after some level of concentration, core-periphery spread effects, technological diffusion processes, or transport infrastructures that affect the locational choice of private capital, suggest that, beyond a certain threshold, advances in the economic development process would contribute to the spatial dispersion of economic activity (Thisse, 2000). A similar conclusion is obtained in the neoclassical growth model as a result of the existence of decreasing returns to capital (Barro and Sala-i-Martin, 1995). Not all researchers, however, share this conclusion. In particular, authors such us Kaldor (1956) or Myrdal (1957) have emphasized repeatedly that economic growth is often associated with an uneven spatial development, which would ultimately result in the existence of a positive relationship

7 We also considered an alternative specification of model (3) with time-specific effects. However, the time dummies were not statistically significant.

between regional disparities and GDP per capita.

The rise in trade over recent decades has attracted attention in the literature as a potential explanatory factor of changes in regional disparities (Kanbur and Venables, 2005; Rodríguez-Pose and Gill, 2006). The impact of trade on spatial inequalities is, however, not well understood yet. On the one hand, Heckscher-Ohlin type analyses indicate that trade contributes to reduce existing disparities, in the cases when capital investment is attracted by those regions with the lowest cost base and labour shifts to the highest salary zones. On the other, it should not be overlooked that, according to this theory, the owners of abundant factors will benefit from trade, while owners of scarce resources will experience falling returns, at least in the medium term. Likewise, the new economic geography allows for different outcomes in relation to the link between trade and spatial inequality, depending on the theoretical assumptions employed in each model (e.g. Krugman and Livas Elizondo, 1996; Puga and Venables, 1999; Paluzie, 2001). In view of these considerations, we control our estimations for the impact of the degree of international trade openness of the different countries on within-country regional disparities.

The sample countries differ considerably in terms of size. This may also affect the level of regional inequality registered within them, as country size may hide greater spatial heterogeneity (Williamson, 1965). We use the population of a country as our measure of country size.

Finally, the redistributive capacity of the state is also likely to affect the level and evolution of territorial disparities within any given country (Rodríguez-Pose et al., 2009).

Accordingly, any observed relationship between regional authority and spatial inequality may be spurious if existing differences in the capacity of government to redistribute financial resources across regions are ignored. In view of this, we control for the size of the public sector, as a proxy for the redistributive capacity of the countries in the sample[8].

Table 5 shows the results of estimating different versions of model (3) using OLS. Regressions 1 through 4 report the results using different time lags of Hooghe et al. (2008) RAI index, while regressions 5 and 6 report those using Treisman (2002) and Brancati (2006) respectively instead. Although the limited time frame of the analysis implies that any conclusion should be treated with caution, our estimates indicate that the coefficient of Hooghe's et al. (2008) RAI index is in all cases positive and statistically significant, regardless of the time lag considered (Table 5, regressions 1 to 4). This positive association between political decentralisation and regional inequality is confirmed by the positive and significant coefficients for Treisman (2002) and Brancati (2006) political decentralisation indices[9] (Table 5, regressions 5 and 6). Accordingly, the degree of authority exercised by regional governments is positively correlated with the magnitude of within-country spatial disparities. This result contrasts with the findings obtained in various earlier studies which have explored this issue in different samples of high-income countries using measures of fiscal decentralisation (Ezcurra and Pascual, 2008; Lessmann, 2009; Rodríguez-Pose and

8 See the Appendix for further details on the control variables included in model (3).

9 Some caution is required when interpreting this result, since these two indices do not vary over the study period. In particular, the measure derived from Treisman (2002) provides one score for the mid-1990s, while the Brancati's (2006) index reflects the situation between 1985 and 2000.

Ezcurra, 2010), but not with those of Rodríguez-Pose and Gill (2004), where some qualitative indications of political decentralisation are included. This suggests that the level of regional authority and the degree of fiscal decentralisation may exert a different effect on the spatial distribution of income, which is consistent with the multidimensional nature of the devolution processes (Schneider, 2003).

INSERT TABLE 5 AROUND HERE

With respect to the additional explanatory variables included in model (3), our estimates reveal that only the coefficients of GDP per capita and the degree of trade openness are statistically significant in all the specifications considered. Specifically, Table 5 indicates that spatial disparities tend to decrease as advances are made in the economic development process. Likewise, our analysis shows that the degree of trade openness is positively associated with spatial inequality in the sample countries.

In order to investigate in greater detail the robustness of our conclusions, we also examine whether the results obtained depend on the measure used to quantify the relevance of within-country spatial disparities. Various inequality measures may actually yield different orderings of the distributions one wishes to compare, since each index has a different way of aggregating the information contained in the distribution (Sen, 1973). For this reason, and in order to supplement the information provided by the coefficient of variation, we calculate the population-weighted standard deviation of the logarithm of regional per capita GDP (s), as well as the two indices proposed by Theil (1967) within the information theory context (T(0) and T(1)). As in the case of the coefficient of variation, all the indices

selected are independent of scale and population size and, except for the standard deviation of the logarithm, they all fulfil the Pigou-Dalton transfer principle for the whole definition domain of income (Cowell, 1995).

Table 6 summarizes the results obtained when model (3) is estimated again using the inequality measures just mentioned as dependent variable. As can be observed, our previous findings still hold, confirming the robustness of the results discussed above. This means that the detected effect of regional authority on spatial inequality does not depend on the specific indicator used to quantify the degree of dispersion in the regional distribution of GDP per capita within the different countries included in our study.

INSERT TABLE 6 AROUND HERE

Following the strategy adopted above, we also investigate the role played by the various dimensions of regional authority identified by Hooghe et al. (2008). The results of this analysis presented in Table 7 show the presence of a positive and statistically significant correlation between self-rule and the dependent variable. In particular, our analysis reveals that the extent to which a regional government is autonomous rather than deconcentrated, the range of policies for which it is responsible, its capacity to tax, and the extent to which it has an independent legislature and executive, are factors that contribute to increase within-country spatial disparities. In turn, Table 7 also shows that the degree of authority exercised by a regional government in the country as a whole does not have a statistically significant effect on the level spatial inequality.

INSERT TABLE 7 AROUND HERE

Conclusions

The economic consequences of the recent rise in the transfers of authority and powers to subnational governments is a topic that, despite generating considerable popular and political debate and in contrast to the abundant work on fiscal decentralisation devoted to this topic, has attracted relatively little attention in academic circles. This is possibly not the result of lack of interest, but the consequence of the difficulties in accurately measuring political decentralisation across different geographical and time contexts. Until very recently, analyses of political decentralisation tended to be not particularly concerned with measuring the dimension of decentralisation and often lacked a comparative component, thus preventing the potential to undertake analyses where the level of transfers of authority to regional and local governments could be used as a dependent variable. Analysing the impact of decentralisation on the economic trajectory of individual regions was also a factor which hardly featured in scholarly analyses.

This dearth of information has been addressed, at least at the national level, by the recent flurry of research which has tried to assess political decentralisation from a comparative perspective. Over the last decade and a half a number of papers have proposed different indices of political decentralisation, which have finally allowed to analyse whether this process has had any positive or negative economic impact. However, the multiple criteria, indicators, methods, timeframes, and geographical coverage of the different indices on offer – and, ultimately, their subjectivity – have contributed to raise the question whether we can

accurately measure the economic impact of political decentralisation and have somewhat constrained the amount of research conducted in this area.

This paper has aimed to address this gap in the literature by looking at a) whether the level of political decentralisation has had any impact on a country's aggregate economic performance and on the evolution of its regional disparities and b) whether the perception of the economic impact of political decentralisation is contingent on the index used.

The results of the different quantitative analyses indicate that the impact of political decentralisation on economic performance, once other factors are controlled for, is clearly dependent on the choice of indicator. The use of different indices of political decentralisation yields considerably different results, making it difficult to assess what impact, if at all, the transfer of powers to lower tiers of government has on economic growth. In any case, the results of the different measures considered tend to point towards either a non-existent or to a very mild positive impact of political decentralisation on a country's aggregate economic performance.

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The results of the analysis of the relationship between political decentralisation and regional inequalities are more clear-cut. In contrast to a number of analyses dealing with fiscal decentralisation, our results point towards the fact that greater political decentralisation seems to be associated with a moderate but significant rise in regional disparities. These results are robust to the use of different indicators and to different measures of inequality.

Overall, the analysis shows that, although recent attempts to measure political decentralisation could lead to significant progress in our understanding of how the emergence of subnational governments affects economic trajectories, there is still a lot to learn about the economic impact of political decentralisation. Different conceptions of political decentralisation, translated into different criteria and indices, are affecting our vision of how decentralisation affects growth and the evolution of inequalities. But how exactly this interaction happens and what mechanisms are at play still remain a mystery.

This is particularly evident at the regional level. Regional-level politics is certain to have, first and foremost, an impact on regional economic performance, which is then translated in aggregate country level economic trajectories. There is indeed plenty of anecdotal evidence that different policies implemented by governments at local and regional level are influencing local and regional economic performance and trajectories. Yet, our analysis says nothing about that. Why is this the case? Simply because the decentralisation indices employed in the literature to measure the degree of transfer of authority and power to subnational governments are available exclusively at the national level and do not provide any within country regional variation. The only exception is the RAI index by Hooghe et al. (2008). However, while this index provides disaggregated information for regions, it has to be noted within the great majority of countries included in the sample, the value of the RAI index does not differ across the regions belonging to the same country (see the Appendix B in Hooghe et al. (2008) for further details). Even in those cases where there are differences within countries, only a limited number of regions register RAI scores distinct from the rest. This lack of variation may simply reflect that the level of autonomy of subnational entities does not necessarily vary significantly across regions in the same country, specially

in those where the process of decentralisation has been symmetrical, but also the fact that large scale in depth comparative analyses of the politics and policy of subnational governments still remain to be conducted. From a purely analytical and econometric perspective, the current lack of regional variation in the indices makes it impossible to determine the potential effect of decentralisation on regional growth. There is therefore a need to continue improving both the measurement of political decentralisation and how it interacts with economic processes, with a particular focus at what is happening within the regions, if we are to really be able to break the dominating 'methodological nationalism' and to measure and determine the true economic impact of political decentralisation.

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Appendix

Variable sources and definitions:

- GDP per capita: Real GDP per capita (average annual growth when used as dependent variable and level when used as regressor). Source: Penn World Tables 6.3.
- Decentralisation measures: See the main text for further details about the definition of the decentralisation indices and the data sources used in each case.
- Investment: Investment expressed as a share of GDP. Source: Penn World Tables 6.3.
- Human capital: Average years of schooling of the population aged 25 and over. Source: Barro and Lee (2000).
- Population: Population, expressed in levels and in average annual growth rates. Source: Penn World Tables 6.3.
- Trade openness: Sum of exports and imports of good and services expressed as a share of GDP. Source: Penn World Tables 6.3.
- Government: Government consumption expressed as a share of GDP. Source: Penn World Tables 6.3.
- Regional GDP per capita: Level of regional GDP per capita. Sources: Cambridge Econometrics, OECD Territorial Statistics and various national statistics.
- Regional population: Level of regional population. Sources: Cambridge Econometrics, OECD Territorial Statistics and various national statistics.

Tables

Table 1: Spearman's rank correlation coefficients.

	Hooghe et al. (2008)	Lijphart (1999)	Woldendorp et al. (2000)	Treisman (2002)	Brancati (2006)
Hooghe et al. (2008)	1.000				
Lijphart (1999)	0.838	1.000			
Woldendorp et al. (2000)	0.739	0.871	1.000		
Treisman (2002)	0.842	0.753	0.579	1.000	
Brancati (2006)	0.821	0.759	0.704	0.860	1.000

All the correlation coefficients are statistically significant at the 1% level.

Table 2: The relationship between decentralisation and growth: cross-section estimation.

Explanatory variables	(1)	(2)	(3)	(4)	(5)
Period	1955-2005	1955-1996	1955-1998	1985-2000	1985-2000
Constant	0.1829***	0.2234***	0.2184***	0.3088**	0.3119**
	(0.020)	(0.024)	(0.022)	(0.116)	(0.117)
Hooghe et al (2008)	0.0000				
	(0.000)				
Lijphart (1999)		0.0013*			
		(0.001)			
Woldendorp et al. (2000)			0.0011**		
			(0.000)		
Brancati (2006)				0.0009	
				(0.002)	
Treisman (2002)					0.0010
					(0.002)
GDP per capita (logs)	-0.0187***	-0.0235***	-0.0229***	-0.0300*	-0.0301**
	(0.003)	(0.003)	(0.003)	(0.014)	(0.014)
Investment	0.0238*	0.0247*	0.0258**	0.0437	0.0431
	(0.012)	(0.013)	(0.012)	(0.050)	(0.050)
Human capital	0.0037	0.0046	0.0037	-0.0008	-0.0011
	(0.003)	(0.003)	(0.003)	(0.012)	(0.012)
Population growth	-0.0264	-0.2689	-0.1110	0.0543	0.1571
	(0.199)	(0.231)	(0.197)	(0.747)	(0.698)
Adjusted R-sq.	0.809	0.816	0.844	0.230	0.231
F-test	17.89***	18.78***	22.59***	2.194***	2.205***
Observations	21	21	21	21	21

The dependent variable is in all cases the average growth rate of real GDP per capita over the period in question. Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table 3: The relationship between the RAI and economic growth: Various subperiods and pooled data.

Period	(1) 1955-1965	(2) 1965-1975	(3) 1975-1985	(4) 1985-1995	(5) 1995-2005	(6) 1955-2005
Constant	0.4321***	0.4765***	0.1040	0.3039**	0.3067*	0.3651***
	(0.070)	(0.075)	(0.137)	(0.110)	(0.164)	(0.045)
Hooghe et al. (2008)	0.0002	0.0009***	0.0006	0.0006**	-0.0003	0.0003*
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
	-	-				-
GDP pc (logs)	0.0422***	0.0518***	-0.0105	-0.0307**	-0.0284	0.0379***
	(0.009)	(0.009)	(0.016)	(0.013)	(0.019)	(0.006)
Investment	-0.0214	0.1260***	0.0575*	0.0638	-0.0510	0.0311
	(0.040)	(0.039)	(0.032)	(0.052)	(0.073)	(0.021)
Human cap. (logs)	-0.0072	-0.0005	-0.0020	0.0005	0.0084	0.0026
	(0.013)	(0.012)	(0.012)	(0.010)	(0.016)	(0.006)
Population growth	0.5330	-0.1921	-0.1153	-0.9868	1.1270	0.0877
	(0.393)	(0.401)	(0.424)	(0.600)	(0.751)	(0.234)
Period 1965-1975						0.0078**
						(0.004)
Period 1975-1985						0.0072
						(0.005)
Period 1985-1995						0.0126**
						(0.006)
Period 1995-2005						0.0259***
						(0.006)
Adjusted R-squared	0.669	0.755	-0.006	0.418	0.382	0,525
F-test	8.264***	12.08***	0.978	3.873**	2.065	13.04
Observations	19	19	19	21	21	99

The dependent variable is in all cases the average growth rate of real GDP per capita over ten-year periods. Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table 4: The relationship between the various dimensions of regional authority and economic growth.

Dimension of the RAI	Effect on growth		Adj. R-sq.	F-test	Observ.
Self-rule	0.0004*	(0.000)	0,527	13.14***	99
Institutional depth	0.0018*	(0.001)	0,525	13.05***	99
Policy scope	0,0013	(0.001)	0,521	12.86***	99
Fiscal autonomy	0,0014	(0.001)	0,521	12.84***	99
Representation	0.0011*	(0.001)	0,525	13.02***	99
Shared rule	0,0004	(0.000)	0,513	12.45***	99
Law making	0,0019	(0.002)	0,514	12.52***	99
Executive control	0,0006	(0.002)	0,508	12.23***	99
Fiscal control	0,0006	(0.001)	0,508	12.25***	99
Constitutional reform	0,0009	(0.001)	0,514	12.51***	99

The dependent variable is in all cases the average growth rate of real GDP per capita over ten-year periods. All the regressions include the full set of control variables and time-specific effects. *** p<0.01, ** p<0.05, * p<0.1.

Table 5: The relationship between decentralisation and spatial disparities.

Explanatory variables						
Constant	1.0027***	0.9647***	0.9327**	0.9347**	0.8355**	0.9746***
	(0.348)	(0.356)	(0.365)	(0.382)	(0.349)	(0.353)
RAI	0.0025***					
	(0.001)					
RAI - one lag		0.0025***				
		(0.001)				
RAI - two lags			0.0026***			
			(0.001)			
RAI - three lags				0.0026***		
				(0.001)		
Treisman (2002)					0.0122*	
					(0.006)	
Brancati (2006)						0.0179***
						(0.005)
GDP per capita (logs)	-0.1023***	-0.0975***	-0.0933**	-0.0922**	-0.0913**	-0.1077***
	(0.036)	(0.037)	(0.037)	(0.039)	(0.036)	(0.037)
Trade openness	0.1072***	0.1036***	0.1004***	0.0967***	0.1212***	0.1350***
	(0.024)	(0.024)	(0.025)	(0.026)	(0.023)	(0.023)
Population (logs)	0.0116*	0.0104	0.0094	0.0082	0.0177***	0.0158***
	(0.006)	(0.007)	(0.007)	(0.007)	(0.006)	(0.006)
Government	0.0856	0.1024	0.1121	0.1187	0.1713	0.1976
	(0.123)	(0.126)	(0.131)	(0.137)	(0.164)	(0.134)
Adjusted R-squared	0.258	0.253	0.250	0.245	0.234	0.262
F-test	11.18***	10.48***	9.761***	8.973***	6.597***	9.909***
Observations	288	270	252	234	288	288

The dependent variable is in all cases the population-weighted coefficient of variation. Heteroskedasticity and autocorrelation robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table 6: Sensitivity of the results to the measure of spatial inequality.

	s		T(0)		T(1)	
RAI	0.0018***	(0.001)	0.0004***	(0.000)	0.0005***	(0.000)
RAI – one lag	0.0018***	(0.001)	0.0004***	(0.000)	0.0005***	(0.000)
RAI – two lags	0.0018***	(0.001)	0.0004***	(0.000)	0.0005***	(0.000)
RAI – three lags	0.0018***	(0.001)	0.0004***	(0.000)	0.0005***	(0.000)
Treisman (2002)	0.0111**	(0.005)	0.0022**	(0.001)	0.0022*	(0.001)
Brancati (2006)	0.0120***	(0.004)	0.0027***	(0.001)	0.0031***	(0.001)

The inequality measures used as dependent variables are weighted according to regional population. All the regressions include the full set of control variables. Heteroskedasticity and autocorrelation robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table 7: The relationship between the various dimensions of regional authority and spatial disparities.

Dimension of the RAI	Effect on disparities		Adj. R-sq.	F-test	Observ.
Self-rule	0.0053***	(0.001)	0.310	18.76***	270
Institutional depth	0.0303***	(0.005)	0.363	26.15***	270
Policy scope	0.0165***	(0.004)	0.284	14.05***	270
Fiscal autonomy	0.0121***	(0.003)	0.259	13.59***	270
Representation	0.0131***	(0.004)	0.276	11.85***	270
Shared rule	-0.0009	(0.002)	0.209	5.448***	270
Law making	-0.0169*	(0.009)	0.230	7.054***	270
Executive control	0.0139	(0.009)	0.224	7.468***	270
Fiscal control	-0.0034	(0.008)	0.209	5.524***	270
Constitutional reform	-0.0035	(0.006)	0.211	5.976***	270

The dependent variable is in all cases de population-weighted coefficient of variation. The various dimensions of the RAI are lagged one year. All the regressions include the full set of control variables. Heteroskedasticity and autocorrelation robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.